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Taxonomic Notes on *Ophiopogon* of South Asia II

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The result of a taxonomic survey on three species of *Ophiopogon* (*O. gracilipes*, *O. peliosanthifolius* and *O. reptans*) is reported. *Ophiopogon peliosanthifolius* was reduced to *O. gracilipes*. *O. gracilipes* here circumscribed occurs in N Thailand and NW Laos. *O. gracilipes* shows the characteristics of both *Ophiopogon* and *Peliosanthes*. This fact not only suggests that this species phylogenetically links the two genera, but also casts doubt on the appropriateness of our current classification system which separates the two genera as distinct. *O. reptans* is newly recorded from Myanmar. Based on the type and some other specimens a revised description of *O. reptans* including its flowers was given.

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Key words: *Ophiopogon gracilipes*, *Ophiopogon peliosanthifolius*, *Ophiopogon reptans*, taxonomy

(2) *Ophiopogon gracilipes* and the identity of *O. peliosanthifolius*

Ophiopogon gracilipes was described by Craib (1912) based on the specimens collected by Kerr (no. 1087) in Chiang Mai, Thailand (Figs. 1, 3A). Meanwhile, *O. peliosanthifolius* was described by Rodriguez (1934) based on the specimen collected by Thorel [no. 3356A – 'A' was appended here to specify this sheet, since there is another specimen with the same collection number which is identified as a different species] in Laos (Figs. 2, 3B, 3C). So far these two species have been recognized as distinct species (e.g., Rodriguez 1934), and there has been no paper suggesting the presence of a close affinity between them.

Fortunately I could have an opportunity to compare the type specimens of these two species (Figs. 1–3). In the type specimen of *O. peliosanthifolius* (Figs. 2, 3B, 3C) only a small amount of floral material was available, but it was not insufficient to reveal the presence of high coincidence in some basic floral features between the two species. For instance, in both species styles were relatively thick and conical, and filaments were coalescent laterally in the lower part forming a short annular tube (Fig. 3). Also in other various characteristics such as those found in rhizomes, roots, leaves and scapes, the two species coincided well with each other. Therefore, it seems more appropriate to regard these two species as conspecific. This unified species is represented by the name of *O. gracilipes.*

Van Steenis and Geesink (1972) thought that *O. gracilipes* must be classified as a *Peliosanthes.* Charoenphol (1974) followed their opinion. Jessop (1976) reduced this species to a synonym of *Peliosanthes teta* Andrews subsp. *humilis* (Andrews) Jessop. It is true that this species is fairly like *Peliosanthes.* Above all, it is a noteworthy fact that the

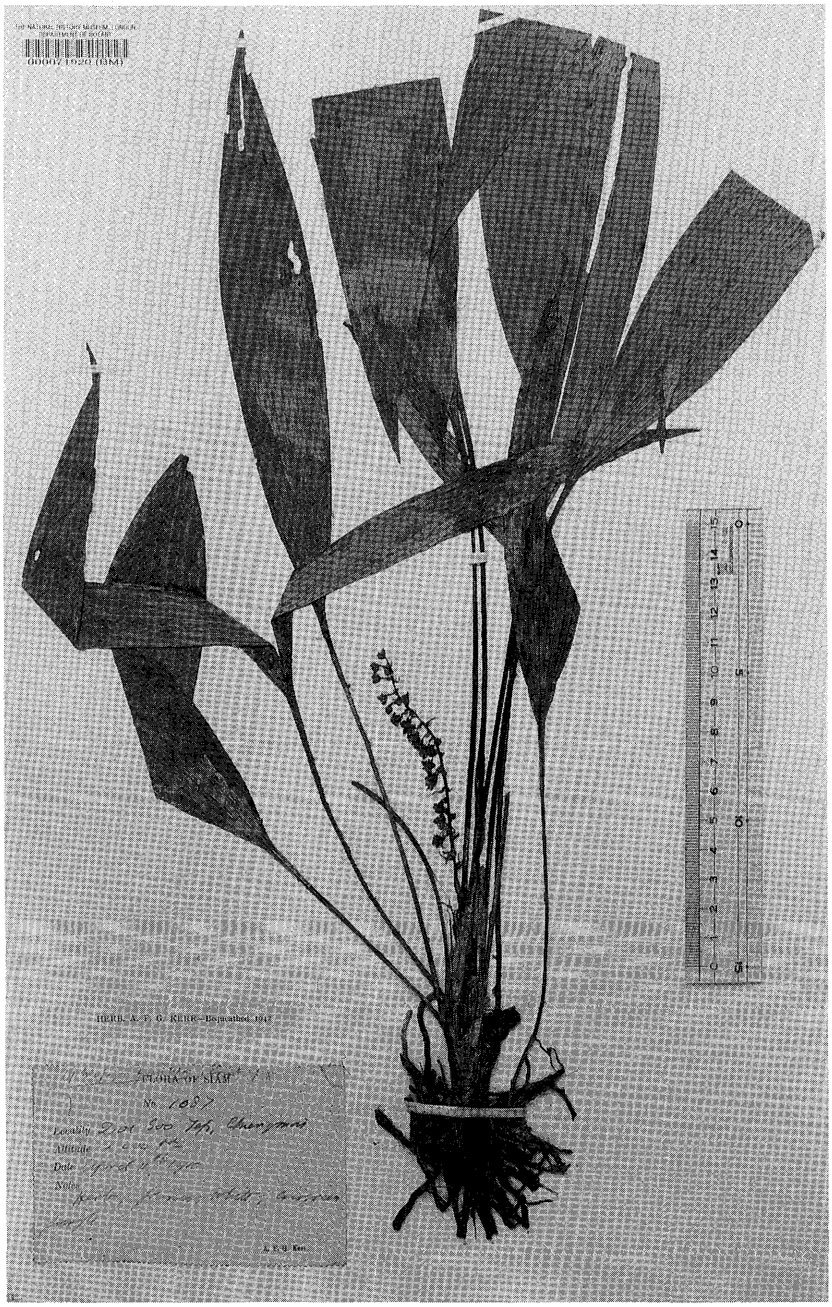

Fig. 1. Type specimen of *Ophiopogon gracilipes* (N Thailand, A.F.G. Kerr 1087, BM).

filaments of *O. gracilipes* form an annular tube by lateral coalescence (Fig. 3), since this character has been believed to be unique to *Peliosanthes*, among the related genera. Further, *O. gracilipes* (Figs. 1–3) and many species of *Peliosanthes* share many similar characters. For instance, their pedicels are articulated terminally, styles are relatively thick and conical, flowers are solitary in axils of bracts (except *P. teta*, s.str.), leaf blades are broad

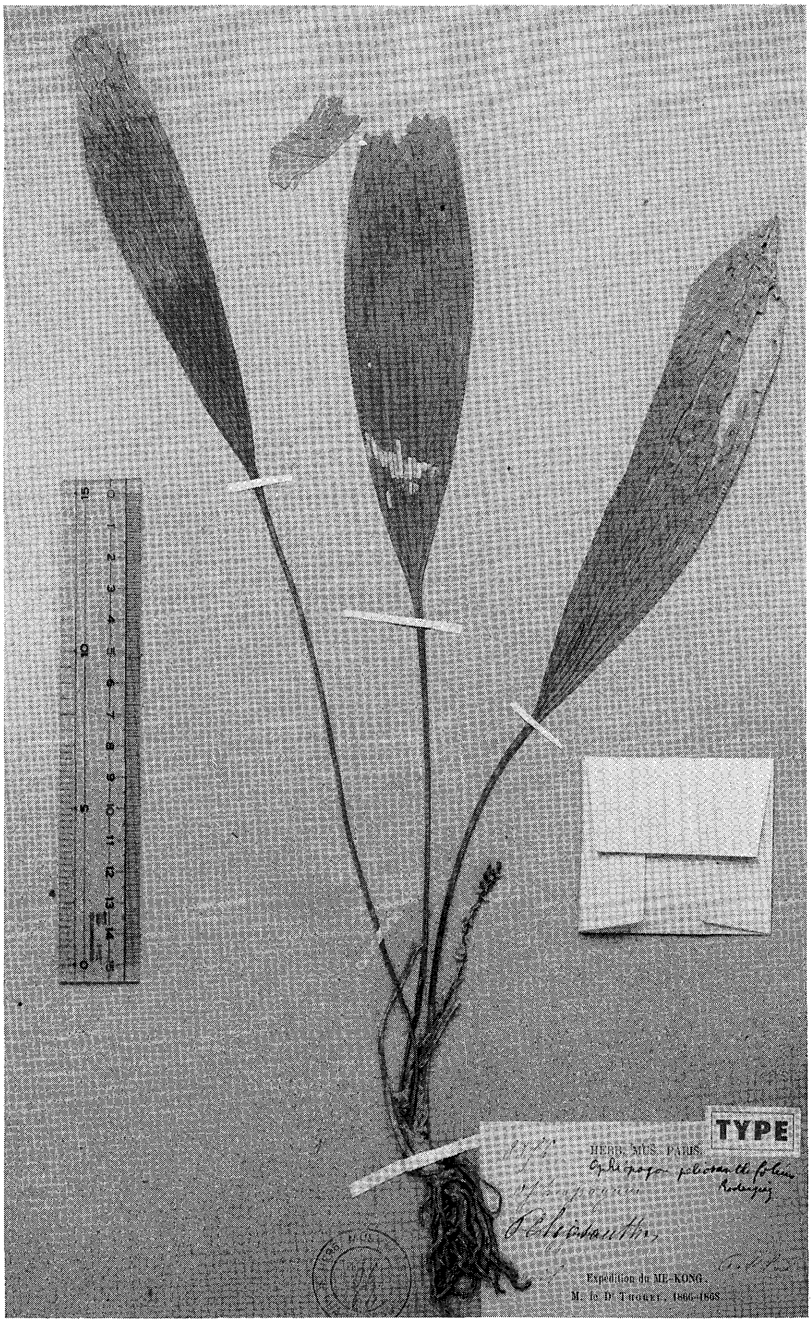
TYPE
HERB. MUS. PARIS.
Ophiopogon peliosanthifolius Rodriguez
Peliosanthes
Expédition du ME-KONG.
M. le Dr Thorel. 1866-1868

Fig. 2. Type specimen of *Ophiopogon peliosanthifolius* (Laos, Thorel 3356A, P). For the collection number of this specimen (Thorel 3356A) see the text.

and petiolate, roots are fibrous and relatively thick, etc. Though it is evident that there is a close affinity between *O. gracilipes* and *Peliosanthes*, we should not overlook the fact that the tubular coalescent part of the filaments in *O. gracilipes* (Fig. 3) is fairly shorter than that of *Peliosanthes*. The low level of the development of this coalescent part in *O.*

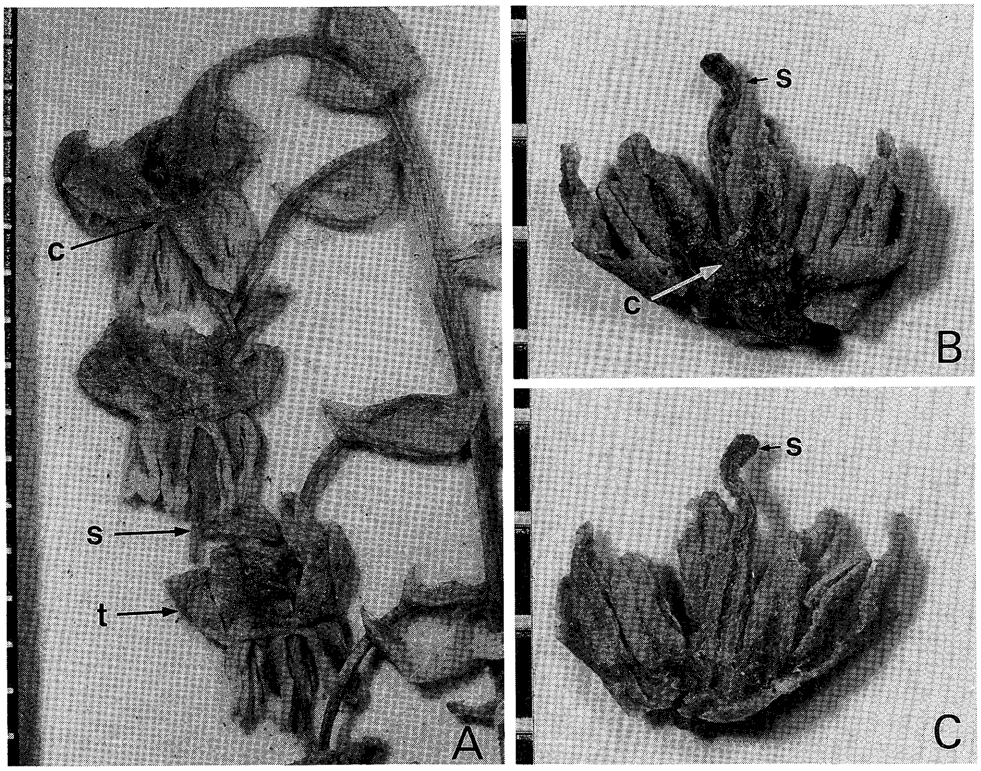

Fig. 3. Close-ups of flowers of *Ophiopogon gracilipes* and *O. peliosanthifolius*. A. A terminal part of a raceme of *O. gracilipes* (Kerr 1087, type, K), showing strongly reflexed tepals (t), filaments connated basally (c), thick conical styles (s), flowers singly borne in axils of bracts, and pedicels without an interstitial articulation. B. A flower of *O. peliosanthifolius* (Thorel 3356A, type, P), showing the lateral connation of filaments in the lower part (c). Some tepals are removed to show stamens and a style (s). C. The same flower as B, but viewed from the back side to show the thick conical style (s). Scales in mm.

gracilipes indicates that this species is still close to *Ophiopogon*. Besides this, the other floral characteristics of *O. gracilipes* do not differ so markedly from those of *Ophiopogon*. Therefore, in this paper I treat this species under *Ophiopogon*, as both Craib (1912) and Rodriguez (1934) did.

As *O. gracilipes* possesses the characteristics of both *Ophiopogon* and *Peliosanthes*, it is highly likely that this species phylogenetically links the two genera. Further, the presence of this species casts doubt on the appropriateness of our current classification system which separates the two genera as distinct.

Ophiopogon gracilipes Craib in Bull. Roy. Bot. Gard. Kew **10**: 411 (1912); L. Rodr. in Lecomte, Fl. Génér. Indo-Chine **6**: 660 (1934); Steenis & R. Geesink in Blumea **20**: 434 (1972). [Figs. 1–3]

Ophiopogon peliosanthifolius L. Rodr. in Bull. Mus. Hist. Nat. Paris. Ser. II. **6**: 95 (1934); in Lecomte, Fl. Génér. Indo-Chine **6**: 659 (1934).

Peliosanthes teta Andrews subsp. *humilis* (Andrews) Jessop in Blumea **23**: 155 (1976), p.p.; in Fl. Malesiana ser. I, **9**(1): 229 (1979), p.p., quoad fig. 16e–g (p. 228).

Glabrous perennial herb. Rhizome short, 2–4 cm long, emitting many relatively thick fibrous roots often 2–3 mm in diameter. Leaves

1–10, all basal. Leaf blades narrowly elliptic to elliptic, acute at both ends, 12–21 cm long, 1.5–4.7 cm wide, papery. Five longitudinal veins often somewhat prominent on both sides. Petioles 6–25 cm long. Scape erect or slightly declinate in the upper part, without longitudinal wings, 10–15 cm long, shorter than leaves. Inflorescence racemose, 5.5–7.5 cm long. Flowers pedicellate, cernuous, secund, borne singly subtended by 2 bracts (of which one is smaller). Bracts ovate to lanceolate, acute, arcuate, scarious, 2–12 mm long, with prominent midrib, appearing also on the lower non-floriferous (sterile) part of the scape. Pedicels slender, joined terminally, 2.3–5.5 mm long. Tepals 6, lanceolate-oblong, 2.8–3.8 mm long, 1.6–1.8 mm wide, white (Kerr 1087, K, BM) or pale greenish yellow (Garrett 121, K), reflexed rather strongly from the base (strong recurvature of the tepals was not confirmed in the type specimen of *O. peliosanthifolius*, simply because of the lack of the floral material in full bloom). Anthers 6, ovate-lanceolate to lanceolate, introrse, 1.3–2.1 mm long. Filaments short, connate laterally in the lower part forming a short annular tube (connate part, 0.2–0.5 mm in height). Style relatively thick, conical, 2–4 mm long.

Distribution: N Thailand and NW Laos.

Specimens examined

Thailand. Top of ridge, Doi Din Deng, watershed between Chiengmai & Lahan, Lampang Districts, pale greenish yellow (colour no. 228a), Apr. 19, 1914, fl., H.B.G. Garrett 121 (K); Doi Sootep, Chiengmai, evergreen jungle, 2200 ft., fls white, April 11, 1910, fl., A.F.G. Kerr 1087 (**type specimens of *O. gracilipes*,** 2 sheets in K, 1 sheet in BM).

Laos. Pak lai (Pak lay), Avril 1866–1868, fl., Thorel 3356A (**type of *O. peliosanthifolius***, P).

(3) *Ophiopogon reptans*

Ophiopogon reptans was described by Hooker (1892) based on the specimens from Khasi (Khasia) Hills and Garo (Garrow) Hills (Figs. 4, 6A), E India. However, Hooker's protologue of this species lacks the description of its flowers, since his specimens were without flowers (these type specimens are either in the fruiting stage or without a scape). As far as I know, the flower of true *O. reptans* has not been described. In the course of the present survey I could find two flowering specimens (Figs. 5, 6B) of which vegetative parts perfectly agree with those of the type specimens of *O. reptans* (Figs. 4, 6A). The result of observations on both the type and flowering specimens is described below. The two flowering specimens were collected by R. Kaulback (no. 354, in C, K) in the northern part of Myanmar (Upper Burma). The occurrence of *O. reptans* in Myanmar is a new record. In this study I could not confirm any other locality of this species, except its type localities in E India. Although Hooker (1892) noted that *O. reptans* closely resembles a Tonkin plant (Balansa 4155bis), the latter plant is, as far as I have examined the Balansa's specimen (K), assignable to a different species, *O. chingii* (the details will be reported in my later paper). Although there have been reports on the occurrence of *O. reptans* in areas other than Myanmar and India, such as Thailand (Larsen 1961, Charoenphol 1974), Vietnam (Rodriguez 1934) and Hainan Isl. of S China (Anonymous 1977), I have not obtained any supporting evidence of the occurrence of this species in these areas. But, of course, this does not mean to exclude the possibility of the occurrence of *O. reptans* in areas other than Myanmar and India.

Ophiopogon reptans Hook.f., Fl. Brit. Ind. **6**: 268 (1892). [Figs. 4–6]

Mondo dracaenoides (Baker) Farwell var. *reptans* (Hook.f.) Farw. in Amer. Midl. Nat. **7**: 42 (1921).

[*Mondo reptans* (Hook.f.) J.N. Mitra, Flower. Pl. East. India **1** (Monocot.): 42 (1958), nom. inval.].

Stem prostrate, ca. 11–41 cm long (2–3 ft., according to Hooker 1892), 2–3 mm in diameter, with distant tufts of leaves arranged at

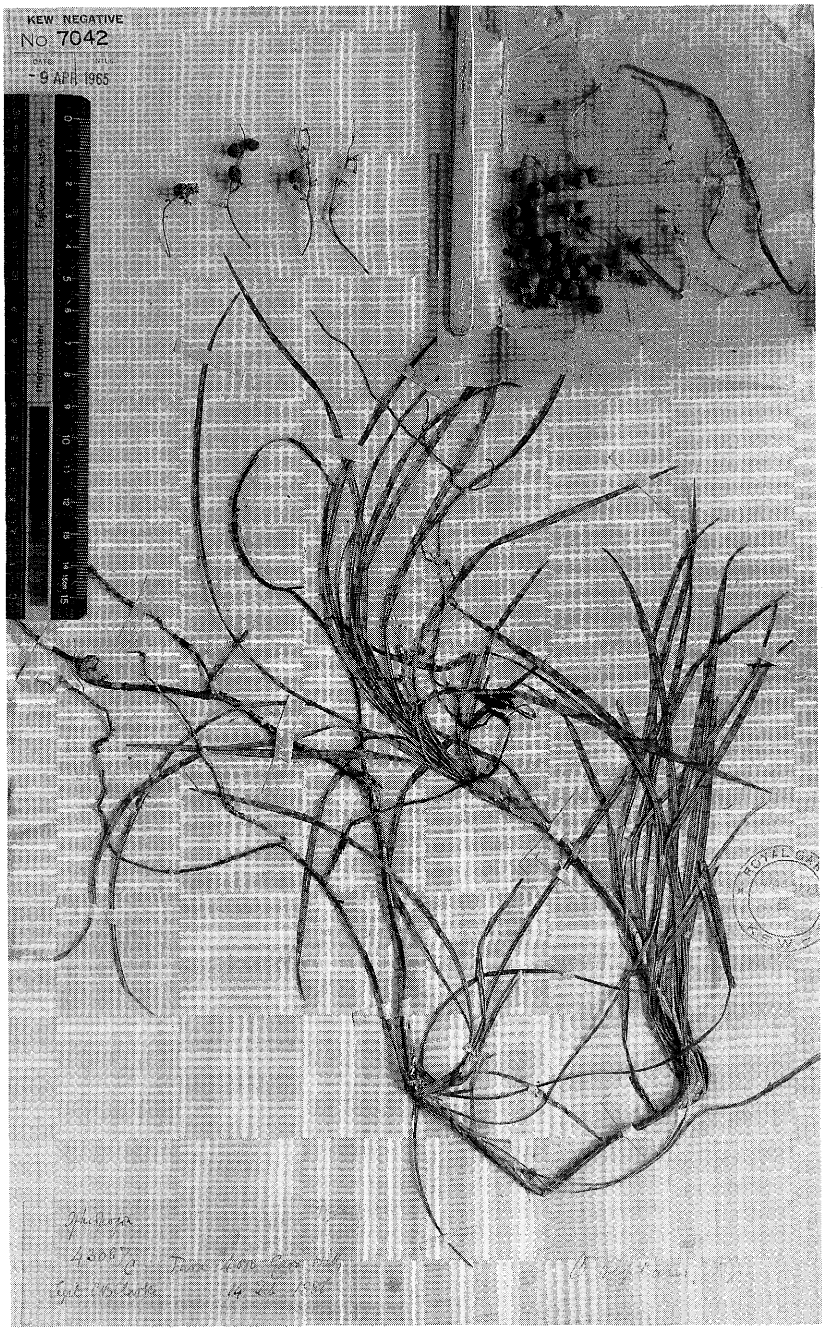

Fig. 4. Type specimen of *Ophiopogon reptans* (Garo Hills, E India, C.B. Clarke 43087C, K) in the fruiting stage.

intervals of ca. 4–10 cm, rooting from nodes. Leaves many, linear, acute, vaginate at base with broad scarious margins, (3–) 5-veined, serrulate on margins, to 24.5 cm long, ca. (1.5–) 2–3 mm wide. Scapes slender, complanate, narrowly 2-winged, usually arcuate

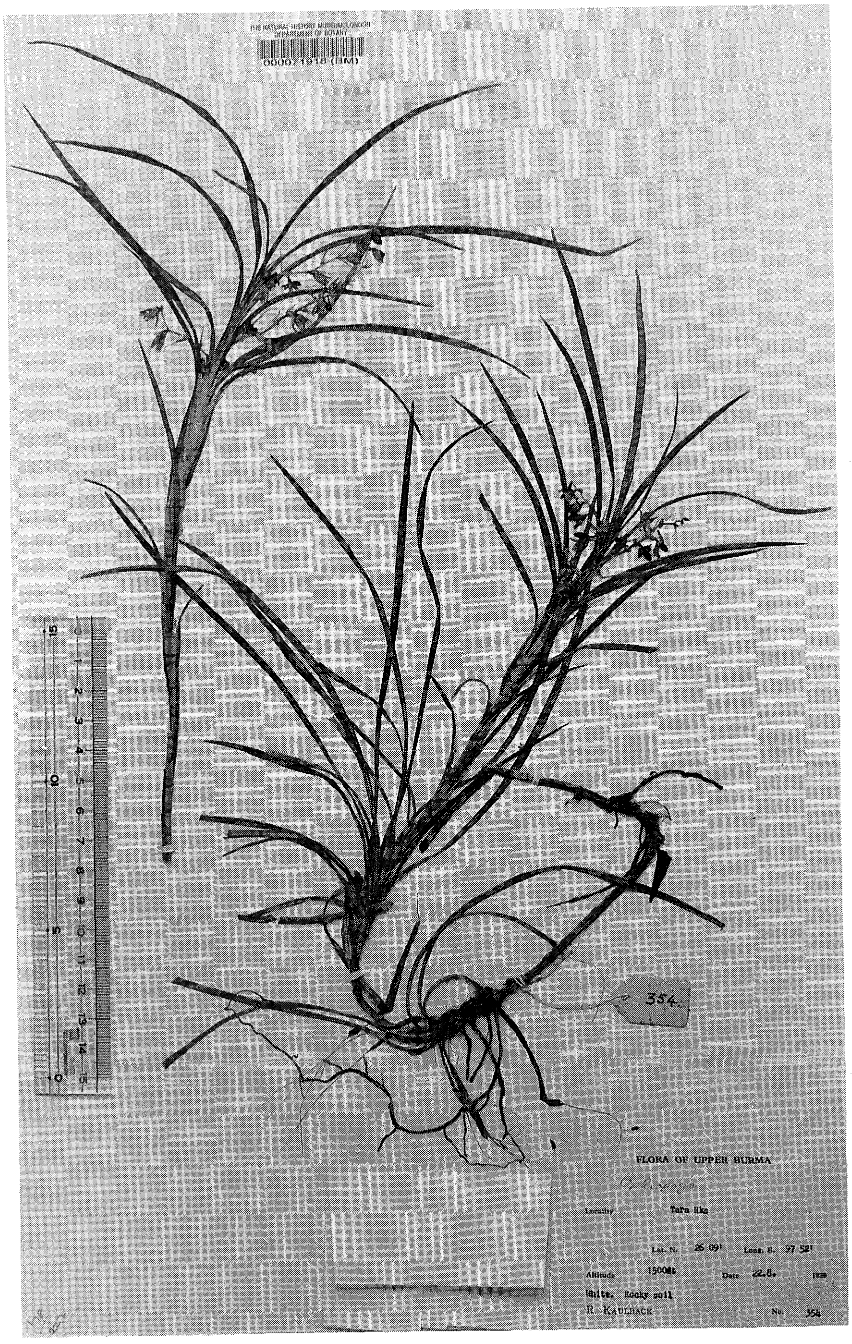

Fig. 5. A flowering specimen of *Ophiopogon reptans* (N Myanmar, R. Kaulback 354, BM).

in the lower part, ca. 4–8 cm long. Inflorescence racemose. Flowers pedicellate, cernuous, secund, 1–2 in each axil of a few fascicled bracts. Bracts lanceolate to narrowly lanceolate, long acuminate to aristate, scarious, serrulate on margins except in the lower part, to

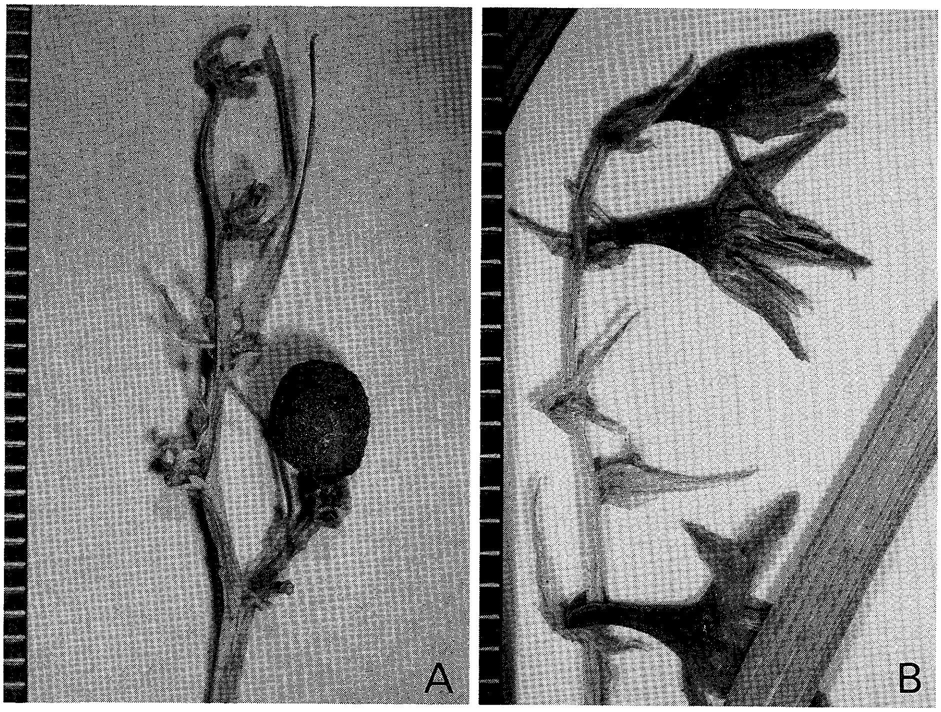

Fig. 6. Close-ups of the scape of *Ophiopogon reptans*. A. A fruiting scape bearing a seed (Garo Hills, India, C.B. Clarke 43087C, type, K). B. A terminal part of a flowering scape (R. Kaulback 354, C). Scales in mm.

ca. 2.7 cm long. Pedicels incl. the lower stalky part of the perianth 1.8–5.5 mm long (1.8–3.5 mm long at flowering time) (true pedicels, excl. the perianth part; 1.5–2.7 mm long), jointed at or below the middle. Tepals 6, white (Kaulback 354, C, BM), lanceolate-oblong, 5–5.4 mm long, 1.6–1.7 mm wide. Anthers 6, lanceolate, free, ca. 3 mm long. Filaments short, 0.5–0.7 mm long. Style slender, attenuate, 4.5–4.7 mm long. Sarcotesta bright blue (Clarke 43087A, K). Seeds globular, ca. 4.5–5 mm in diameter (1/4–1/3 inches in diam., according to Hooker 1892).

Distribution: E India and N Myanmar.

Specimens examined

India. Khasia, Nurtiung, alt. 4–6000 ft., J.D. Hooker s.n. (**syntype of *O. reptans***, K); Garo Hills, alt. 4000 ft., wide creeping rooting, berries bright blue, Feb. 14, 1886, fr., C.B. Clarke 43087A & 43087C (**syntypes of *O. reptans***, K).

Myanmar. (Upper Burma) Tara Hks, 26°09'N, 97°52'E, 1500 ft., rocky soil, white, Aug. 22, 1939, fl., R. Kaulback 354 (C, BM).

I thank the curators of BM, C, K and P for the loan of the specimens.

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田中教之：**南アジア産ジャノヒゲ属の分類学的検討II**

ジャノヒゲ属3種（*Ophiopogon gracilipes, O. peliosanthifolius, O.reptans*）についての観察結果を報告した．*Ophiopogon gracilipes* と *O. peliosanthifolius*とは同一種であるとの結論を得た．この種の正名は*Ophiopogon gracilipes* であり，*O. peliosanthifolius*はその異名となる．本種の花柱はやや太めの円錐状をなし，花糸はその下部において側面で互いに合着する．花糸が側面で合着するという性質は*Peliosanthes*属と共通し，また葉などの形態も同属とよく似ている．本種を*Peliosanthes*属の種として分類する研究者もいるが，花糸の合着した部分の発達程度は比較的低く，葯その他の花部形態は概して*Ophiopogon*により近いことなどから，本種を*Ophiopogon*属の種としてここでは扱った．本種は *Ophiopogon* と *Peliosanthes* 両属の性質を合わせ持つことから，両属を系統的に繋ぐ種である可能性が極めて高い．また，本種の存在は，これまでのように両属の植物群を2属に分類することの妥当性について疑問を投げかけるものである．本種はタイ北部とラオス北西部に分布している．*Ophiopo-gon reptans* の名はこれまでしばしば同属の他種に誤って適用されてきた．また本種の花部形態はこれまで知られていなかった．本種を正しく理解する上で，また誤同定を防ぐ意味においても，タイプ標本と花を持つ標本に基づく研究が必要であった．今回*Ophiopogon*属の多数の標本の中から，本種のタイプ標本(花はない)と極めてよく一致する花付きの標本を見出すことができた．この花付きの標本はミャンマー北部で採集されたものである．花部形態も含めて本種を改めて記述した．筆者が調べた範囲では，本種はタイプ標本の産地であるインド東部以外ではミャンマー北部が唯一の産地である．本種のミャンマーにおける分布の記録は本報告が初めてである．今後ミャンマーやインド以外の地域においても本種が新たに見出される可能性は十分ありうる．

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